

## **REMARKS/ARGUMENTS**

### **Information Disclosure Statement**

With this Response, the Applicants are filing a Supplemental Information Disclosure Statement. The Supplemental Information Disclosure Statement includes an Office Action mailed January 31, 2001 in U.S. Patent Application No. 09/425,236 and International Preliminary Examination Reports in PCT Application Nos. PCT/CA00/00876 and PCT/CA00/00875. The U.S. Office Action relates to Application No. 09/425,236 which is one of the parent applications of the present application. The IPERs for PCT/CA00/00876 and PCT/CA00/00875 relate to Application Nos. 09/425,234; 09/425,235 and 09/425,236 each of which are parent cases of the present application.

### **Amendments to the Specification**

The first sentence of the application has been amended to give the patent numbers of two of the parent applications of the present case which have since issued. The first sentence of the specification has also been amended to refer to Provisional Application No. 60/146,154 which was mentioned in the continuity information section of the Application Data Sheet filed with the present application. The Applicants respectfully request that the claims for domestic priority under 35 USC 119(e) and under 35 USC 120 and/or 121 be acknowledged in the next Office Action.

### **Amendment to the Claims**

Claim 26 has been amended to state in step (b) that a retentate is generated in the tank and that the retentate is drained from the tank in step (e). These amendments are supported by the specification at page 7, line 26 to page 8, line 12. The wherein clause has also been moved in claim 26 to be before step (f) to improve the grammar of the claim. Step (g) has been amended to clarify that the steps of backwashing the membranes and draining the tank referred to in step (g) are steps occurring in the same cycle. Step (h) of claim 26 has been amended to state that the steps of backwashing the membranes in repeated cycles periodically involves backwashing with a cleaning

chemical in a first cycle after performing step (b) in the first cycle and without returning to step (b) before starting a subsequent cycle. This amendment is supported by the specification at page 9, lines 7-10; page 9, line 19 to page 11, line 1; page 15, line 19 to page 16, line 27; page 17, line 22 to page 18, line 5; page 18, line 27 to page 19, line 3 and by Example 1 (see page 27, lines 19-22) and Example 2 (see page 28, lines 2-8).

Claim 27 has been amended to use the words "repeated cycles" consistently throughout the claim and to refer to the "process" of claim 26 to match the wording of claim 26.

Claim 28 is also amended to refer to the "process" of claim 26. Further, claim 28 has been amended to refer to a further step of performing recovery cleanings from time to time to increase the permeability of the membranes wherein the steps of claim 26 are performed between the recovery cleanings and reduce the rate of decline in permeability of the membranes between the recovery cleanings. These amendments are supported by the specification at page 17, line 21 to page 18, line 5.

Claim 29 is amended to depend on claim 28 and refer to "process" of claim 28. Claim 30 is also amended to refer to the "process" of claim 29. Both of claims 28 and 29 are also amended to refer to a sum of products of concentration and duration per week over a period of at least one month. These amendments are supported by the specification at page 17, lines 21-28 and Examples 1 and 2 at page 27, line 17 to page 28, line 14.

New claim 31 depends on claim 28 and states that the recovery cleanings are performed at least one month apart from each other. This is supported by the specification at page 17, line 27.

New claim 32 depends on claim 28 and states that the filtered permeate generated at the permeate outlet is intended for use as drinking water and the cleaning chemical comprises an oxidant. This is supported by the specification at page 9, line 27 and page 18, lines 6-9.

New claim 33 depends on claim 29 and states that the steps of backwashing with a cleaning chemical are performed at regular intervals and each have about the same product of concentration and duration. This is supported by the specification at page 18, lines 19-20 and page 17, lines 16-20.

New claim 34 depends on claim 26 and states that the membranes are backwashed with permeate after a step of backwashing with a cleaning chemical in a first cycle before beginning a subsequent cycle. This is supported by the specification at page 10, lines 9-11 and lines 19-21.

New claim 35 depends on claim 26 and states that the step of backwashing the membranes with a cleaning chemical comprises the steps of flowing water to the permeate side of the membranes and mixing a cleaning chemical into the flowing water. This is supported by the specification at page 10, lines 12-21.

New claim 36 depends on claim 26 and states that the membranes are hollow fibre porous membranes. This is supported by the specification at page 6, line 30 to page 7, line 4.

#### **Claim Rejections 35 USC 103**

Claims 26 to 30 were rejected as being obvious in view of Smith '479. The Applicants submit that the claims as amended are not made obvious by this reference.

Claim 26 states that the step of backwashing the membranes with a cleaning chemical in a first cycle is performed after performing step (b) (generating a filtered permeate) in the first cycle without returning to step (b) in the first cycle and before starting a subsequent cycle. The Office Action gives four references to backwashing the membranes in a process described in Smith '479. None of these describe backwashing the membranes with a cleaning chemical without returning to permeation before starting a subsequent cycle, as the cycles are defined in claim 26. Considering the references in detail, the table at column 15 does not state when backwashes occur. None of column

15, lines 16-47, column 18, lines 13-29 or column 11, lines 22-26 describe backwashing after a permeation step but without returning to permeation in a first cycle. In contrast, column 18, lines 26-29 state that the dirty water remains in the casing outside of the tube and in contact with the biofilm on the outer surface of the membrane. Column 11, line 25 states that cleaning is done without draining feed from the module and column 11, lines 54-56 state that continued withdrawal of permeate from the feed contaminated with cleaning fluid does not deleteriously effect the permeate quality. All of these references suggest that the process in Smith '479 returns to permeation after a backwash with a chemical cleaner without the tank being drained and refilled to end a first cycle and start a subsequent cycle.

The Office Action acknowledges that Smith does not advocate draining the tank during the cleaning process. The Office Action, however, then recites Smith column 11, lines 46-60 as support for a proposal that it would be obvious to drain the tank during or after the cleaning cycle in the Smith process to avoid the permeate getting contaminated with the cleaning fluid. However, Smith column 11, lines 46-60 includes a statement at lines 54-56 that continued withdrawal of permeate from the feed contaminated with cleaning fluid does not deleteriously effect permeate quality. Accordingly, Smith's reference to feed contaminated with cleaning fluid cannot make draining the tank obvious because Smith states that the permeate quality is not deleteriously effected.

At page 4, first paragraph, the Office Action states that Smith teaches that draining of the tank is commonly practiced during cleaning. The Office Action refers to column 10, lines 59-68. This reference, however, refers to techniques in which cleaning solutions are applied from outside of a fiber and without reference to all of the steps of claim 26. Accordingly, these prior art techniques are not relevant to a process as in claim 26 in which the cleaning chemical is provided by backwashing the cleaning chemical through the membranes. The Office Action further cites Smith column 11, lines 23-61. This reference does not provide any support for the proposition that draining the tank is commonly practiced during cleaning. Rather, this reference contains two explicit

statements (at lines 24-25 and lines 54-56) that, in the Smith process, the tank is not drained during or after cleaning.

The Office Action further states that disclosing examples or preferred embodiments do not constitute a teaching away from a broader disclosure or non-preferred embodiments. However, the Smith reference does not include any broader disclosure of a process as described in claim 26 or any non-preferred embodiment according to the Applicants' claim 26. Further, Smith '479 does not merely disclose examples and preferred embodiments in which the tank is not drained, Smith '479 gives explicit statements against processes that involve draining the tank. For example, the prior art method described at column 10, lines 59-68, aside from being unlike claim 26, is also described as being "highly undesirable".

The Office Action also states at page 4 that a reference is no less anticipatory if it disparages a disclosed invention and that a reference which teaches away from the invention is still applicable to an anticipation analysis. The Applicants respectfully submit that these statements are irrelevant. Both statements apply to anticipation only. The Office Action does not make an anticipation rejection and the Applicants submit that no anticipation rejection is possible. In contrast, the Office Action rejects the claims on the basis of obviousness alone. For an obviousness rejection, the fact that a reference disparages or teaches away from a claim is clearly relevant. For an obviousness rejection, the teachings of the prior art, taken as a whole, must suggest any modifications to the prior art. *In re Napier*, 55 F.3d 610, 34 USPQ2d 1782 (Fed. Cir. 1995). Teaching away from a claimed invention is an important indicium of non-obviousness and a per se demonstration of lack of prima facie obviousness. *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Nielson*, 816 F.2d 1567, 2 USPQ2d 1525 (Fed. Cir. 1987).

Regarding claim 27, this claim depends on claim 26 and is allowable for the reasons given in relation to claim 26. In addition, claim 27 states that the cycles of part (f) of

claim 26 are repeated at least once a day. Because the cycles are repeated at least once a day, step (e), draining the tank, occurs at least once a day. Further to the arguments above, Smith '479 does not teach or even mention draining a tank at least once a day.

Claim 28 depends on claim 26 and is not obvious for the reasons given in relation to claim 26. In addition, claim 28, as amended, states that the steps of claim 26 are performed between recovery cleanings which increase the permeability of the membranes, the steps of claim 26 reducing the rate of decline in permeability between recovery cleanings. Recovery cleaning is described and contrasted with the cleaning occurring in the cycles of claim 26 in the application at page 17, line 21 to page 18, line 5. The Applicants submit that Smith '479 does not make obvious any process having both cleaning steps performed in repeated cycles as in claim 26 and recovery cleaning steps.

Regarding claims 29 and 30, the Office Action gives various calculations based on Figure 4 of the Smith reference. Claims 29 and 30 have been amended to refer to a sum of products per week over a period of at least one month. Figure 4 of Smith '479 describes various backwashes with a chemical cleaner performed over a period of 17 days. The time between the backwashes and their duration varies. There is no teaching of what, if any, particular backwashes might continue per week after the 17 days. Further, claims 29 and 30 are dependent on claim 26 and therefore occur in the context of a process performed in repeated cycles, the cycles including steps of draining the tank and, from time to time, backwashing the membranes with a cleaning chemical without returning to permeation before starting a subsequent cycle. To reject a claim for obviousness, the combination of elements in the claim as a whole must be obvious. *Kimberly-Clark Corp. v. Johnson & Johnson*, 745 F.2d 1437, 1448, 223 USPQ 603, 609-10 (Fed. Cir. 1984); *Fromson v. Advance Offset Plate*, 755 F.2d 1549, 1556, 225 USPQ 26, 31 (Fed. Cir. 1985). There is no suggestion relating to the example of Figure 4 that the tank will ever be drained and it is certainly not drained before returning to permeation after each chemical cleaning step as required in claim 26. The Office Action

states that Figure 6 shows repeated cycles of once a day of cleaning, but any cycle shown in Figure 6 is not a cycle according to the Applicants' claim 26 since there is no tank draining as part of each cycle of Figure 6 either. Further, merely because Figure 6 shows a cycle of some sort, that does not teach that the example of Figure 4 should be performed in a repeated cycle. Rather, the regular application of cleaning steps in Figures 5 and 6 clearly contrast with the irregular use of cleaning steps in Figure 4 and is consistent with the Applicants previous submission that Figure 4 was not intended to teach any particular method to be repeated on a weekly basis for any extended period of time.

The Office Action also derives a product of concentration and duration by combining (1) a concentration of 10 ppm OCI from one part of Smith giving that as the lowest concentration which may be used with (2) another part of Smith located four columns away discussing a time parameter that is not linked to any particular concentration. Smith '479 does not teach how any particular durations and concentrations are to be selected from these ranges and, in particular, does not teach the particular combination proposed in this section of the Office Action. Absent such a teaching, the Applicants submit that the Office Action does not provide a proper basis for an obviousness objection.

Finally, the Office Action refers to the example of Figure 6 of Smith '479 and disputes the relevance of a bulletin indicating the mass of citric acid required in a given volume of water to produce a citric acid solution with a pH of 2.5. The Applicants accept that different amounts of citric acid are required to produce a pH of 2.5 in waters of differing buffering capacity and withdraw their previous submissions regarding this technical bulletin. The Applicants also include a declaration of Ake Deutschmann, one of the inventors of Smith '479. The Applicants do not, however, submit at this time that any information in Mr. Deutschmann's declaration represents what, if anything, a person skilled in the art would learn or be taught by the disclosure in Smith '479.

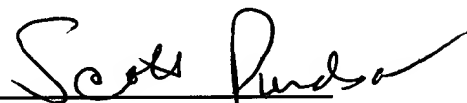
Smith does not say what concentration of citric acid was used in the example of Figure 6 nor describe how the solution was prepared. The most recent Office Action does not allege that Figure 6 of Smith provides the elements of claim 28 or 29 and the previous Office Action only alleged that Figure 6 of Smith "may" provide a product of concentration and duration as specified in claims 28 or 29. The Office Action further states that the pH of a citric acid solution is not directly related to the concentration of citric acid. But the burden of raising a prima facie case of obviousness lies on the PTO. *In re Reuter*, 651 F.2d 751, 210 USPQ 249 (CCPA 1981). Having stated that pH is not directly related to the concentration of citric acid and provided no teaching in Smith that the pH 2.5 solution of citric acid has any particular concentration, the Applicants submit that the Office Action does not provide a sufficient basis for rejecting claims 29 or 30.

New claims 31 to 36 are related to claims 26 to 29 but add additional elements to the claims they depend on. The Applicants submit that new claims 31 to 36 are not obvious for the reasons given in relation to claims 26 to 29 in addition to these additional limitations.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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